

Finite Difference Solution of Rotatory Flow of Dissipative Fluid Past an Impulsively Started Infinite Vertical Plate

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Abstract: *A flow of dissipative fluid flow past an impulsively started infinite vertical plate in a rotating fluid by using finite difference method. It is observed that due to more rotation rate of heat transfer decreases, axial and transverse skin friction increases for all Pr. Also there is rise in the temperature for low density fluid ($Pr < 0.71$) but when Pr is large temperature increase due to more rotation of the system near the plate and decreases far away from the plate. And rotating speed increase axial velocity decrease and the transverse velocity is also decrease for all Prandtl number.*

Keywords: Dissipative fluid , Skin friction, Heat transfer, Prandtl number

REFERENCES

- [1]. Gebhart B. "Effects of viscous dissipation in natural convection" 'J Fluid Mech.14, (1962) 225-232.
- [2]. Bachlor G. K. "An introduction to fluid Dynamics". CUP (1967)
- [3]. Hall. M. G. "Boundary layer over an impulsively started flat plate" Proc. of Roy. Soc (London) (1969). 310 A: 401
- [4]. Soundalgekar V.M., Bhat J.P., Mohiuddin M. "Finite difference analysis of free convection effects on stokes problem for a vertical plate in dissipative fluid" Int.J.Eng.Sic.17, .(1979).1283-1288.
- [5]. Stokes .G. C. "On the effect of the internal friction of fluids on the motion of pendulums." Camb . Phil. Trans. IX, (1851). 8
- [6]. Lahurikar R.M, "On flow past an impulsively started infinite vertical isothermal plate in a rotating fluid - solution" Bulletin of the Marathwada mathematical society Vol. 11 No. 1, p 41-49. (2010).
- [7]. V. B. Bhalerao , R.M. Lahurikar , "Flow Of Dissipative Fluid Past An Impulsively Started Infinite Vertical Plate In A Rotating Fluid."Int. J. of Applied Mathematics and Engineering Sciences(IJAMES) Serials Publication , Vol. 8, No. 1 pp. 39-44. (2014) (ISSN- 0973-5275).
- [8]. Vinod. B. Kulkarni (Bhalerao), "Free convection effect on Stoke's problem for a vertical plate in a rotating dissipative fluid with constant heat flux." Int. J. For Research in Applied Sciences & Engineering Technology (IJRASET), pp. 2214-2218(Feb-2018). ISSN: 2321-9653;IC Value:45.98;SJ Impact Factor: 6.887, Vol. 6 Issue – II .